DOCUMENT RESUME

ED 249 779 FL 014 605

AUTHOR	Silva, Marilyn N.
TITLE	Developmental Issues in the Acquisition of Conjunction.
INSTITUTION	Stanford Univ., Calif. Dept. of Linguistics.
PUB DATE	Sep 84
NOTE	10p.; In: Papers and Reports on Child Language Development, Volume 23, p106-114 Sep 1984.
AVAILABLE FROM	PRCLD, Department of Linguistics, Stanford University, Stanford, CA 94305 ($12.00 for entire volume; individual papers not available).
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Adults; *Child Language; Comparative Analysis; *Discourse Analysis; *Form Classes (Languages); *Language Acquisition; Story Telling; Young Children
IDENTIFIERS	*Conjunctions

ABSTRACT

The notion that children over age 5 have acquired a conjunction once they have used it appropriately once or a specified number of times is challenged with data from a study of the narrative discourse of school age children. In the study, 26 adults and 71 children aged 4 to 11 were asked to tell a story about three sets of story pictures. Analysis of the resulting narratives indicated a clear increase in the frequency of subordinate conjunctions with age, with subjects under 7 using only "when" and "because," conjunctions already present in the speech of toddlers. In addition, it was found that children's use of conjunctions, particularly temporal ones, differed from the adults'. Some new insights derived from the results include: (1) the adult use of "when" to highlight contingency rather than co-temporal or sequential events; (2) certain constraints on the positional freedom of "when" clauses; (3) the relationship among "when" and the other temporal conjunctions, "while" and "as;" and (4) the rarity of "because" clauses. Further analysis of the data reveals more detailed information. A number of explanations are offered for these results, including the difference between ordinary conversation and narrative discourse, the need to revise previous notions of acquisition as an all-or-none phenomenon to reflect contextual learning, the complexity of the structures concerned, and the effects of the transition to literacy on the number and kind of subordinate devices found in children's language. (MSE)

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DEVELOPMENTAL ISSUES IN THE ACQUISITION OF CONJUNCTION

Marilyn N. Silva
California State University, Hayward

Currently, we know a good deal about what conjunctions children use and the order in which they come to use them (Bloom, Lahey, Hood, Lifter, and Fiess 1980; Clancy, Jacobsen, and Silva 1976; Clark 1973, 1971, 1970; Eisenberg 1980; Werner and Kaplan 1963). However, most research has focused on the language of children under five and has assumed that children who appropriately use a conjunction either once or a specified--but arbitrary--number of times have acquired that form (cf. Bloom et al. 1980; Clancy et al. 1976). I would like to challenge that notion of acquisition. My evidence for such a challenge comes from a study I carried out with school age children.

Very young children can, as has been amply demonstrated, use conjunctions in and across sentences. But what happens when children attempt to produce the extended, connected, and cohesive discourse that narrative represents? Because I suspected that an increase in discourse complexity introduced by narrative would have repercussions in sentential syntax, I asked 26 adults and 71 children between the ages of 4 and 11 to "tell a story" about each of three sets of story pictures, one of which is presented in Figure 1. In analyzing the resulting narratives, I divided the subjects into groups and found a clear increase in the frequency of subordinate conjunctions with age. (The children's grade levels and mean ages are given in Table 1, along with frequency of subordinate conjunction.) Further analysis revealed that subjects younger than 7 tended to use only *when* and *because*, conjunctions already present in the conversations of toddlers (Clancy et al. 1976). Moreover, children's use of conjunctions, particularly the temporal conjunctions, differed from that of the adult subjects.

Because of a lack of previous research on the narrative use of conjunctions, the adult data provided some new insights. As a group, the adults tended to select a particular conjunction to describe the specific relationships between events depicted in the story pictures. It was therefore possible to examine the determinants of the choice of a particular conjunction. (See Silva 1981, 1983 for more detailed discussion.) In the case of *when*, for example, the majority of adult clauses were indeterminate as to whether they indicated co-temporality or sequence. In fact, *when* seemed to be indifferent to this distinction, highlighting instead the contingency of events, a function which apparently leads children to acquire this particle early in ontogeny, right after they have been using simple coordinated or juxtaposed sequences to communicate this intent.

In addition, there were certain constraints on the positional freedom of *when* clauses. Although *when* clauses appeared both pre- and post-posed, these two clause types were informationally distinct from one another. Adults strongly preferred preposed *when* clauses to specify backgrounded information, but when the conjunction was used

to signal a sudden change in ongoing activity, the adults always postposed the clause, as in "They were having a good time, making a mess, when their mother came in and told them to clean up."

Another interesting finding with respect to the temporal subordinators concerns the relationship among when and the other cotemporal conjunctions, while and as. Contrary to common assumptions that cotemporality has a more or less unified underlying semantics, a continuum of specificity seems to be involved: although the converse is not true, when or while may often replace as, a conjunction appropriately used in fewer contexts. That is, when may be chosen if the events described by the joined clauses are sequential or overlapping in various degrees, whereas while may be chosen only if the events are overlapping. As is even more constrained; beyond the requirement of overlapping events, it also requires that the predicates of the two clauses share a locus and that the subordinate predicate not be stative. The prototypical sentence using temporal as has the same subject in both clauses, e.g., "As they were walking, they thought about the movie they had just seen."

Before and after, conjunctions which have generated much discussion in the acquisition literature, were rare in the adult data.

GROUP	AGE RANGE	MEDIAN GRADE	PERCENT
I	4;10-6;11	K	36.7%
II	7;0-8;11	2	54.2%
III	9;0-11;11	4	69.6%
ADULTS	N/A	N/A	84.6%

TABLE 1: Percent of Narratives Containing At Least One Temporal or Causal Subordinate Structure

The children, like the adults, used when in the narratives more frequently than any other temporal subordinator. The similarity between adults and children, however, ends with frequency, for in the use of when, children differ from adults in several ways.

First, unlike the adults, children never used postposed when clauses to signal a sudden change in ongoing activity. Second, when children did postpose when clauses, they often did so in contexts where adult subjects did not. Although all subjects showed a preference for preposed when clauses, the oldest group of children demonstrated a marked increase in this preference (see Table 2).

Subjects in Group I, the youngest group, although generally in command of the syntax of preposed when clauses, nevertheless did exhibit some strategies in constructing them which were absent from the narratives of the older children. For example, some subjects produced a well-formed when clause only to "pro-adverbialize" it to then, a strategy which allows the speaker to abbreviate the contents of the subordinate clause before appending the main clause:

(1) And then, when they were ready, then ... they did their SHOW (4;10).

GROUP	FREQUENCY OF WHEN	PERCENT PREPOSED	PERCENT POSTPOSED
I	18	66.7%	33.3%
II	35	60.0%	40.0%
III	38	89.5%	10.5%

TABLE 2: Percents of Pre- and Post-Posed When Clauses

Another Group I subject changed the syntax of her utterance from subordinate to coordinate:

(2) And when their mother saw what happen- ... and UM ... her mother saw what happened and she said "Clean up your room (5;0)."

Yet another subject combined a subordinate with a coordinate strategy, thereby producing an ungrammatical string:

(3) And then when the company came, and the floor was all cleaned out ... and ... then ... and ... then they ... UM the two little kids after the party they messed up (6;11).

Each of these utterances thus represents an attempt to simplify the complexity which the subordinate clause introduces.

Most of the when clauses for Group I were, however, grammatical. One subject even shifted from a coordinate to a subordinate strategy:

(4) And they came home fr- ... when they came home from the movie, they thought about it (6;8).

The rarity of errors among subjects in Groups II and III was remarkable; outside of the occasional false start, only one ill-formed when utterance occurred in the protocols of either group, an instance of the subordinate-coordinate strategy found in (3).

As already indicated, subjects' facility with when clauses increases dramatically in Group III. One ten-year-old boy began all three of his narratives with a preposed when clause:

(5) When these two kids were playing in their room they made a big mess (10;1).

(6) When this kid was playing around in the mud having fun, these two kids were making fun of him and calling him a pig and all that.

(7) When their mother was taking them going shopping, UM ... they saw a sign that had these two ladies.

This subject has apparently taken the preposed when clause into its most complex usage, that of narrative opener.

The temporal conjunctions while and as were rare in the children's narratives; across all three groups of children, while occurred sixteen times and as occurred only twice, once in Group II and once in Group III. The low frequency of as is particularly interesting, since as was the second most frequent temporal conjunction in the adult narratives, following only when in number of occurrences.

To investigate this phenomenon, we turn to children's responses to frame B of Figure 1. This frame is of special interest because among adult subjects, it tended to elicit as; 42.3% of the adult subjects selected this conjunction. Children, however, were virtually unaware of the possibility of using this conjunction to mark the simultaneous relation depicted in this frame. Some children in Group I did not even verbalize two events, describing instead only one of the simultaneous activities of walking and think'ng:

(8) And then they were walking (5;1).

(9) And they're thinking about looking like them (6;11).

Some others described the frame in terms of two discrete acts which they coordinated:

(10) They walk and they think about that poster (5;10).

Only three Group I subjects used subordinate temporal structures. Two of these are introduced by temporal conjunctions; the third is a participial construction:

(11) And UH ... the mother was ... thinking up ... it ... while they were walking back (5;4).

(12) When they came home from the movie, they thought about it (6;8).

(13) So they went home, thinking how it looked (5;8).

Group II subjects used strategies similar to those of Group I. Five described one event only, as in (14) and (15):

(14) And then they're thinking about those two girls (7;7).

(15) They thought ... about ... the show (7;8).

Twelve others used strategies of coordination or juxtaposition, as in (16) and (17):

(16) So their mother took 'em home and they were talking about how they would ... gonna look ... 'n' stuff (8;4).

(17) The two girls were thinking about that picture. The mom was still there, walking with her kids.

Yet most important for our consideration are the eight subjects who used subordinate clause strategies. The majority of these subjects chose when clauses, a possibility never selected by adults. (18) is typical:

(18) When they were walking home ... by a park, they were thinking about the two pretty ladies (8;11).

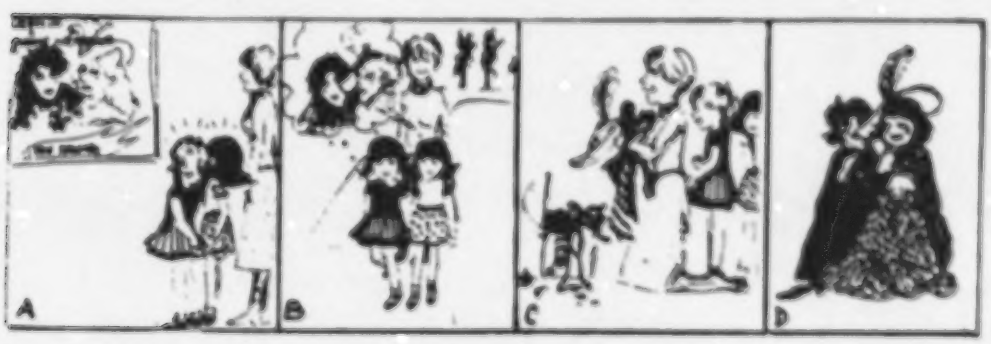

FIGURE 1: STORY PICTURES

Only three subjects in Group II chose while or as, one even correcting herself from when to while (while was also not an adult choice):

(19) And when ... while they were walking home UM she ... they're thinking about the two ladies, because one of 'em had blond hair and one of 'em has dark brown hair, and that's what they showed in the movie (8;9).

The performance of Group III was not substantially different from that of the other two groups. Although only five Group III subjects chose the subordinate strategy, like the subjects in the other groups, their preferred conjunction was when. (20) is typical:

(20) And when they were walking home, the two girls were thinking about the costumes (9;3).

The children as a whole were not only less likely than the adults to choose subordinate strategies for describing simultaneous events, but they also did not choose the same subordinator. In place of as, the conjunction adults preferred, children, with only two exceptions, selected when or while (see Table 3).

GROUP	When	While	As	prtcpl	% sbrd
I	1 (5.0%)	1 (5.0%)	0	1 (5.0%)	15.0%
II	5 (17.9%)	2 (7.1%)	1 (3.6%)	1 (3.6%)	32.1%
III	3 (13.0%)	1 (4.3%)	1 (4.3%)	0	21.7%
ADULTS	0	0	11 (42.3%)	0	42.3%

TABLE 3: Summary of Subordinate Responses to B

We cannot appeal to low frequency in the adult language to account for the rarity of as in the children's narratives. To explain children's choices, we must rely instead on the notion of increasing constraint mentioned earlier. When is less constrained and less aspectually specific than while, which is in turn less constrained and specific than as.

Children's selection of when or while in contexts in which adults choose as is not an error, nor are the sentences they use in these contexts ungrammatical. For the most part, in fact, children perform quite grammatically. However, the children's data provide further support for the developmental principle articulated by Slobin (1973: 184-185): "New forms first express old functions, and new functions are first expressed by old forms." As Werner and Kaplan (1963: 175) contend, "available means are exploited for new ends until function-specific instrumentalities are forged for the novel functions." Thus children first use the conjunction when before they move on to while in appropriate contexts, and while before advancing to as when the context would allow.

Let us turn now to the temporal conjunctions that have been claimed to signal order (Clark 1971), before and after. I have argued elsewhere (Silva 1983) that, unlike the adverb connectives

first-then, the conjunctions before and after often imply other relations superimposed on the ordinal, such as the prerequisite relation, a factor which adds to their complexity. As I have already pointed out, adults used these conjunctions only rarely in their narratives. Children do not surprise us in this respect. They too used these two conjunctions infrequently.

Like the adults, the children used after more frequently than they did before, and they used it with more syntactic options, as demonstrated in Table 4. Only four clausal before constructions were produced by the entire pool of 71 subjects.

Because after was not only more frequent than before but also combined more readily with a number of syntactic options, it seems less complex. This position runs counter to that of Clark (1973). Clark's Semantic Feature Hypothesis assigns featural values to the lexical items before and after such that before shows a positive value for the feature [prior], whereas after is marked negatively for the same feature. The hypothesis is that the positive feature is acquired earlier.

TYPE	GR. I N=20	GR. II N=28	GR. III N=23	ADULTS N=26
After + S	1	9	6	1
After + part.	0	0	0	4
After + N	2	4	2	8
After (adv)	0	1	0	0

TABLE 4: Distribution of After Constructions

The featural complexity argument cannot account for the higher frequency of after constructions in both adult and child protocols. The most likely explanation lies instead in the areas of discourse function and informational load. In general, after constructions are less complex because, unlike before constructions, they restate old information. Our child subjects provided plenty of evidence for this contention. (21) is a typical example:

(21) And when they went out, they saw a poster. And the poster was of two girls. And after they looked at the poster they were walking on the sidewalk .... And after they were walking on the sidewalk, they went back home. And the two little girls started thinking about the poster and they got ready .... And after they got ready, they looked just like the girls in the poster that they saw (8;2).

On rare occasions, a subject might use an after construction to present new information, a use as infrequent as before constructions:

(22) Joanie and Barbara one day saw a poster on the wall with their mother after they went shopping (9;11).

(23) Then their mom came in and said, "Clean up those toys before I vacuum" (7;8).

Both (22) and (23) introduce new information. Unlike before, however, after did not usually serve this function. Before, was used to anticipate a new story development within the sentence focusing on the event of current interest and was thus similar to postposed cases of when signalling change of state. Given these functions of the ordinal conjunctions, it is clear that after is less complex in terms of the demands of discourse production and processing and thus more frequent than before.

Table 5 provides, in order of descending frequency, the temporal conjunctions which the children used and illustrates that whereas when became more frequent with increasing age, even the oldest children avoided the other co-temporal conjunctions, using while and particularly as far less frequently than did adults.

The results of this study thus demonstrate that even ten-year-old children do not use conjunctions in the same way adults do, especially in the extended discourse which narrative represents. Children's lack of production of certain forms does not of course imply a lack of comprehension. In the current study, for example, nearly all the child subjects responded correctly to questions designed to assess understanding of specific conjunctions. Yet many of these same subjects did not spontaneously use those conjunctions which they apparently understood.

CONJUNCTION	GR. I	GR. II	GR. III	TOTALS
When	18	35	38	91
After (+S, +NP)	3	13	8	24
After (+S only)	(1)	(9)	(6)	(17)
While	5	4	7	16
Before (+S)	1	2	1	4
As	0	1	1	2

TABLE 5: Temporal Conjunctions Children Use, In Approximate Order of Descending Frequency

Moreover, we cannot ignore the fact that conjunctions like before and after, although relatively rare in the narrative context, may occur readily across speakers in ordinary dialog. Thus, although a five-year-old may not use these conjunctions in narrative, he may indeed use them in conversation.

There are several ways to deal with such concerns. One involves considering the difference between ordinary conversation and the extended discourse of narrative. In ordinary conversation, the structure of what surfaces linguistically is partly determined by the interaction. That is, the interlocutor may ask questions, make comments or otherwise indicate what other information must be speci-

fied. In narrative, on the other hand, the use of the conjunctions investigated in this study involves the anticipation of listener needs. That is, a successful narrator has in some way internalized a model of the informational needs of the listener such that certain forms which appear spontaneously in the narrative would have appeared at an earlier stage only when prompted by interaction. Yet beyond the interspeaker dimension -- perhaps an outgrowth of it -- there lies the issue of the organization of information, a skill which is in large measure language-specific and only gradually learned.

A second way of looking at the results is to reexamine the notion of acquisition used in the literature, which assumes that acquisition is an all-or-none phenomenon (c.f. Bloom et. al.'s [1980] criterion of productivity). Perhaps we need to shift from this absolute notion in which a form either is or is not acquired to a more relative notion in which the relevant question is whether a form is acquired in a given context. Certainly the appearance of a form when it is motivated by the interaction between speakers is less complex than the spontaneous use of that form within the utterance of a single speaker. And the occurrence of a subordinate clause or clauses in strings longer than a single sentence is more complex than the two uses just described.

Beyond this, we have the complexity of the structures themselves. Thus we may find recapitulated in narrative some of the sequences observed earlier in acquisition. On the other hand, narrative may actually foster the development of some of the less frequently used forms. More research is needed on the appearance of conjunctions in naturally occurring conversation before we can make this claim with any certainty.

In addition, there is the question of whether the transition to literacy has an effect on the number and kind of subordinate devices found in children's language. Chafe (1979) has already suggested that a written tradition may foster the development of some integrative devices like subordination, not only in the individual speaker, but in the language itself. It may well be that as the child acquires reading skills, he acquires the capacity for more integrated and abstract language. The relationship between the acquisition of literacy skills and the development of integrative devices like subordination is a topic for further research.

Clearly, these ways of looking at the results of the study are complementary rather than contradictory. It seems likely that factors involved in all these perspectives interact to determine the observed results.

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